UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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ART UNIT	PAPER NUMBER
2178	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
Office Action Summary		09/681,771	BRILL ET AL.
		Examiner	Art Unit
		Kyle R Stork	2178

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>02 June 2001</u>.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-23</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-23</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>05/06/2003</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   This office action is in response to the application filed June 2, 2001 and the

Information Disclosure Statement filed May 6, 2003.

2.   Claims 1-23 are pending. Claims 1, 11, and 18 are independent claims.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1,6, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Mogilevsky (U.S. 5,787,451) and further in view of Ristad et al. (Learning String

Edit Distance).

As per independent claim 1 Mogilevsky discloses the method for spelling

correction of a phrasal string, comprising:

- Segmenting the phrasal string into a plurality of different segmentations (column

   4, lines 42-50: This section speaks of the phrasal string and how it is

   determined; column 4, lines 51-52: This section speaks of segmenting the

   phrasal string into complete words)

Mogilevsky fails to disclose:

- Determining a cost associated with each of the plurality of different

   segmentations

- Identifying a segmentation having a lowest cost corresponding to a most probably correct spelling of the phrasal string

However, Ristad discloses:

- Determining a cost associated with each of the plurality of different segmentations (page 288, right column, paragraph 2)

- Identifying a segmentation having a lowest cost corresponding to a most probably correct spelling of the phrasal string (page 288, right column, paragraph 2; Section 2.3)

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have combined Mogilevsky's method of spell checking phrasal strings through segmentation with Ristad's method of determining cost and identifying a lowest cost for a spell correction, since it would have allowed a user to spell check a phrasal string and have the lowest cost option for correction identified.

As per dependent claim 6, Mogilevsky and Ristad discloses the limitations similar to those in claim 1, and the same rejection is incorporated herein. Mogilevsky further discloses the method wherein each of the plurality of different segmentations includes contiguous sub-strings over the phrasal string (column 4, lines 40-52: Here, the phrasal string is the range of characters selected by the calling routine. Also, a sub-string is a complete word identified by the spelling core. Further, because the range is contiguous, the sub-strings (words) selected by the spelling core are also contiguous.)

As per dependent claim 10, Mogilevsky discloses a computer-readable medium containing computer-executable instructions for performing the process recited in claim

1 (Claim 1, "A computer-readable medium having computer-executable instructions for performing steps comprising:").

5.   Claims 2, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mogilevsky and Ristad and further in view of Bernth et al. (U.S. 2002/0087604).

As per dependent claim 2, Mogilevsky and Ristad disclose the limitations similar to those in claim 1 and the same rejection is incorporated herein. Mogilevsky and Ristad fail to specifically disclose the method of further comprising spelling correcting each of the plurality of different segments using dictionary looping. However, Bernth discloses the method of spelling correction of different segments using dictionary looping (page 3, paragraph 0052).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have combined Mogilevsky and Ristad's method of identifying the segment of a phrasal string having the lowest cost with Bernth's method of spelling correction through dictionary looping, since it would have allowed a user to have the mistakes that were identified corrected.

As per dependent claim 5, Mogilevsky, Ristad, and Bernth disclose the limitations similar to those in claim 2 and the same rejection is incorporated herein. Ristad further discloses the method wherein the cost is a cost of correcting each of the plurality of different segments (page 288, right column, paragraph 2).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have combined Mogilevsky Ristad, and Bernth since it would

have allowed a user to know the cost of correcting a segment to allow the user to determine whether he/she wants to make the correction.

As per dependent claim 7, Mogilevsky and Ristad disclose the limitations similar to those in claim 6 and the same rejection is incorporated herein. Mogilevsky and Ristad fail to specifically disclose the method of further comprising spelling correcting sub-strings of a segment using dictionary looping. However, Bernth discloses the method of correcting sub-string segments using dictionary looping (page 3, paragraph 0052).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have combined Mogilevsky and Ristad's method of identifying the segment of a phrasal string having the lowest cost with Bernth's method of spelling correction through dictionary looping, since it would have allowed a user to have the mistakes that were identified corrected.

6.   Claim 3-4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mogilevsky, Ristad, and Bernth and further in view of Walfish et al. (U.S. 6,047,300).

As per dependent claim 3, Mogilevsky, Ristad, and Bernth disclose the limitations similar to those in claim 2 and the same rejection is incorporated herein. However, they fail to disclose comparing each of the plurality of different segmentations with entries in a phrasal dictionary. However, Walfish discloses comparing each of the plurality of different segmentations with entries in a phrasal dictionary (Figure 3, item 304; column 11, lines 26-33).

It would have been obvious to one of ordinary skill in the art at the time of the

applicant's invention to have combined Mogilevsky, Ristad, and Bernth's method of spell

correcting with Walfish's method of comparing phrasal strings with entries in a phrasal

dictionary, since it would have allowed a user to accurately have segments compared to

acceptable segments.

As per dependent claim 4, while Walfish fails to specifically disclose the method

wherein the phrasal dictionary is capable of containing phrasal strings, including

phrases, words, and spaces, dictionaries often contain phrasal strings, words, and

spaces (See examples: Marilyn Monroe, Roman Empire, holy cow).

As per dependent claim 8, Mogilevsky, Ristad, and Bernth disclose the limitations

similar to those in claim 7 and the same rejection is incorporated herein. However, they

fail to disclose comparing each of the sub-strings with entries in the phrasal dictionary to

find an entry having a closest match. However, Walfish discloses comparing each of

the sub-strings with entries in the phrasal dictionary to find an entry having a closest

match (Figure 3, item 304; column 11, lines 26-33).

It would have been obvious to one of ordinary skill in the art at the time of the

applicant's invention to have combined Mogilevsky, Ristad, and Bernth's method of spell

correcting with Walfish's method of comparing phrasal sub-strings with entries in a

phrasal dictionary, since it would have allowed a user to accurately have segments

compared to acceptable segments.

As per dependent claim 9, Mogilevsky, Ristad, Bernth, and Walfish disclose the

limitations similar to those in claim 8, and the same rejection is incorporated herein.

However, Bernth also discloses constructing a corrected segmentation using the closes match for each substring (page 3, paragraphs 0050-0052).

7.   Claims 11-13, 18, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mogilevsky and further in view of Walfish et al.

As per independent claim 11, Mogilevsky discloses a method for spelling correction of a misspelled phrasal string containing words, spaces, and characters comprising:

- Receiving the misspelled phrasal string (column 4, lines 42-45: Here, scanning a document is the same as receiving the phrasal string.)

- Dividing the misspelled phrasal strings into a plurality of segmentations (column 4, lines 51-52)

Mogilevsky fails to disclose:

- Comparing each of the plurality of segmentations to entries in a dictionary

- Determining a best segmentation from the plurality of segmentations that represents the most probable correct spelling of the misspelled phrasal string

However, Walfish discloses:

- Comparing each of the plurality of segmentations to entries in a dictionary (column 11, lines 26-33)

- Determining a best segmentation from the plurality of segmentations that represents the most probable correct spelling of the misspelled phrasal string (column 11, lines 8-17)

It would have been obvious to one of ordinary skill in the art at the time of the

applicant's invention to have combined Mogilevsky's method of dividing phrasal strings

with Walfish's method of comparing segments to a dictionary in order to determine the

most probable correct spelling, since it would have allowed a user to have the most

probable word suggested or even inserted instead of having to sift through several

words with similar spellings.

As per dependent claim 12, Mogilevsky and Walfish disclose limitations similar to

those of claim 11 and the same rejection is incorporated herein. Mogilevsky also

discloses the method wherein each of the plurality of segmentations contains sub-

strings (column 4, lines 40-52: Here, because the phrasal string is broken down into

several words, there are now sub-strings of the original phrasal string).

As per dependent claim 13, Mogilevsky and Walfish disclose the limitations

similar to those of claim 12, and the same rejection is incorporated herein. Walfish

discloses the method wherein comparing each of a plurality of segmentations to entries

in a dictionary is performed by finding a closest match between sub-strings of

segmentation and a dictionary entry (column 11, lines 8-17).

As per independent claim 18, Mogilevsky discloses a system for spelling

correction of a phrasal string comprising:

- A segmentation module that divides the phrasal string into a plurality of

    segmentations, each of the plurality of segmentations containing sub-strings

    (column 4, lines 42-52)

However, Mogilevsky fails to disclose the system further comprising:

- A looping comparator that corrects a segmentation by comparing each of the sub-strings of the segmentation with entries in a dictionary to determine the closest match

- An output string containing a corrected segmentation having the lowest cost that represents a correct spelling of the phrasal string

However, Walfish discloses:

- A looping comparator that corrects a segmentation by comparing each of the sub-strings of the segmentation with entries in a dictionary to determine the closest match (column 11, lines 26-33)

- An output string containing a corrected segmentation having the lowest cost that represents a correct spelling of the phrasal string (column 11, lines 8-17)

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have combined Mogilevsky's method of segmenting a phrasal string with Walfish's method of looping through a dictionary and determining the correct spelling with the lowest cost, since it would have allowed a user to have his or her spelling checked and the correct word substituted without using undue amounts of system resources.

As per dependent claim 22, Mogilevsky and Walfish disclose the limitations similar to those in claim 18, and the same rejection is incorporated herein. Walfish also discloses the system wherein the dictionary is a dynamic phrasal dictionary containing phrasal strings capable of containing words, phrases, characters, and spaces (column 16, lines 1-10).

As per dependent claim 23, Mogilevsky and Walfish disclose the limitations similar to those in claim 22, and the same rejection is incorporated herein. Walfish further disclose the system further comprising a dynamic update module that provides dynamic updating of phrasal dictionary entries (column 11, lines 1-10).

8.   Claims 14-16, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mogilevsky and Walfish and further in view of Ristad et al.

As per dependent claim 14, Mogilevsky and Walfish disclose the limitations similar to those in claim 11, and the same rejection is incorporated herein. Mogilevsky and Walfish fail to disclose the method further comprising determining a cost associated with each segment. However, Ristad discloses the method further comprising determining a cost associated with each segment (page 288, right column, second paragraph; section 2.2).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have combined Mogilevsky and Walfish's method of spelling correction with Ristad's method of determining a cost, since it would have allowed a user to be aware of the processing cost of making the spelling correction.

As per dependent claim 15, Mogilevsky, Walfish, and Ristad disclose the limitations similar to those in claim 14, and the same rejection is incorporated herein. Ristad further discloses the method wherein the best segmentation is a segmentation having a lowest cost (page 288, right column, second paragraph; section 2.2).

As per dependent claim 16, Mogilevsky, Walfish, and Ristad disclose the limitations similar to those in claim 14, and the same rejection is incorporated herein.

Walfish further discloses the method wherein hierarchical parameters are used to determine the cost of each segment (column 10, lines 23-26: Here, replacement criteria is a set of hierarchical parameters; Figures 4a- 4c; column 11, lines 61-67: Here, different criteria are used as examples for creating a hierarchy where "Exactly One Adjacent Transpose" is at the top of the hierarchy and the "Off by One Double Character" is at the bottom. More information can be found in column 12, line 1- column 13, line 58).

As per dependent claim 19, Mogilevsky, Walfish, and Ristad disclose the limitations similar to those in claim 18, and the same rejection is incorporated herein. Ristad further discloses the correction system wherein the cost associated with each of a plurality of segmentations is determined (page 288, right column, second paragraph; section 2.2).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have combined the system of spelling correction of Mogilevsky and Walfish with the system of cost determination of Ristad, since it would have allowed a user to have a cost effective substitution for misspelled segmentations.

As per dependent claim 20, Mogilevsky, Walfish, and Ristad disclose the limitations similar to those in claim 19, and the same rejection is incorporated herein. Walfish further discloses comprising a hierarchical module that provides hierarchical parameters to the looping comparator (column 10, lines 23-26: Here, replacement criteria is a set of hierarchical parameters; Figures 4a- 4c; column 11, lines 61-67: Here, different criteria are used as examples for creating a hierarchy where "Exactly One

Adjacent Transpose" is at the top of the hierarchy and the "Off by One Double Character" is at the bottom. More information can be found in column 12, line 1- column 13, line 58).

9.   Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mogilevsky, Walfish, and Ristad and further in view of Ishikawa (U.S. 5,812,863).

As per dependent claim 17, Mogilevsky, Walfish, and Ristad disclose the limitations similar to those in claim 16, and the same rejection is incorporated herein. Mogilevsky, Walfish, and Ristad fail to disclose the method wherein the hierarchical parameters include at least one of:

- A length of dictionary entry

- A dictionary entry given a context of neighboring words in the phrasal string

However, Ishikawa discloses the method wherein hierarchical parameters include a dictionary entry given a context of neighboring words in the phrasal string (column 8, line 66- column 9, line 7).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have combined the Mogilevsky, Walfish, and Ristad's method of hierarchical spelling correction with Ishikawa's method of using the context of neighboring words in a phrasal string, since it would have allowed a user from another country to prepare documents without mistakes (Ishikawa: column 3, lines 19-40).

10.   Claims 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mogilevsky, Walfish, and Ristad and further in view of Ishikawa (U.S. 5,812,863) and Gilai et al. (U.S. 6,018,736).

As per dependent claim 21, Mogilevsky, Walfish, and Ristad disclose the limitations similar to those in claim 20, and the same rejection is incorporated herein. Mogilevsky, Walfish, and Ristad fail to disclose the system wherein the hierarchical parameters include a length of dictionary entry and a probability of a dictionary entry given a context of neighboring words of the phrasal string. However, Gilai discloses the system wherein the hierarchy is based upon the length of the word (column 10, lines 3-5 and claim 10, specifically the section on arranging the dictionary into a hierarchy of clusters based upon the reduced alphabet). Ishikawa further discloses the system wherein a dictionary entry uses a given context of neighboring words of the phrasal string (column 8, line 66- column 9, line 7).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have combined the system of Mogilevsky, Walfish, and Ristad with Gilai's system of traversing a hierarchical dictionary based upon the length of words and further with Ishikawa's system of using neighboring words of the phrasal string, since it would have allowed for words with the correct context and the same number of letters to have a higher chance of being inserted correctly into a document.

Claim Rejections - 35 USC § 102

11.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

12.   Claims 1-23 are rejected under 35 U.S.C. 102(a) as being anticipated by Eric Brill

and Robert C. Moore (An Improved Error Model for Noisy Channel Spelling Correction).

As per claims 1-23, Brill and Moore disclose the limitations similar to those in all

claims (page 2, left column; page 3, left column: discusses examining words in

segments; page 3, right column- page 4, left column: discusses distance based

substitution; page 5, left column: discusses a hierarchy).

Conclusion

13.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

- Mogilevsky (U.S. 5,649,222): Discloses background spell checking of phrasal

    strings.

- Birman et al. (U.S. 6,616,704): Discloses spell checking of phrasal strings.

- Golding (U.S. 5,659,771): Discloses context sensitive spell checking.

- Domini et al. (U.S. 6,085,206): Discloses spelling and grammar checker.

- Whitman et al. (U.S. 6,772,150): Discloses dynamic phrasal updates.

- Potter (U.S. 6,131,102): Discloses cost computation for spelling suggestions and

    replacement.

- Damerau et al. (U.S. 5,258,909): Discloses spell checking and correction.

- Google Friends Newsletter for May 23, 2001: Discloses the introduction of the
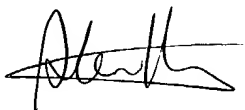
    "Did you mean:" feature.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyle R Stork whose telephone number is (703) 605-1203. The examiner can normally be reached on Monday-Friday (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Hong can be reached on (703) 308-5465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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STEPHEN S. HONG
PRIMARY EXAMINER